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Indoor Air Quality (IAQ) Upgrade Package

An Added Value Opportunity

For Discussion Purposes Only
***for* the Super E™ House Program**

PREPARED FOR:

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Energy Technology Branch, Energy Sector
Department of Natural Resources Canada
Ottawa, Ontario, K1A 0E4
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Department of Natural Resources Canada
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Ottawa, Ontario
K1A 0E4

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K1A 0G1

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Introduction

As customers become more and more aware of the impacts of poor indoor air quality on home-owner health, allergies and comfort, the ability to offer clients an "Indoor Air Quality Upgrade" package becomes a true marketing advantage for builders. With minimal effort, a builder/manufacturer can create a package that provides clients with a healthier house at minimal costs. Most elements of the package offer much more than improved indoor air quality (IAQ), and hence have broad market appeal. Builders/manufacturers who position themselves to offer such packages can differentiate themselves from the competition and will be positioned to take advantage of a demand from home owners that will only be getting larger in the future.

Fundamental Elements of Improved IAQ

The following is the order of importance when developing an IAQ upgrade package:

1. ELIMINATE: the first step is to completely remove known indoor pollutants from the interior of the living space by replacing troublesome materials with alternative ones;

2. SEPARATE: where materials cannot be eliminated, separating them from the living space can be achieved by sealing surfaces of materials;

Note: With steps 1 and 2, target those elements with the largest surface area—material emissions tend to be directly related to surface area.

3. VENTILATE: finally, once all efforts have been made to prevent pollutants from degrading IAQ, a good ventilation system will dilute any remaining offenders, introducing fresh air to the living space while exhausting stale air from high pollutant areas.

Introduction

À mesure que les consommateurs prennent conscience des conséquences de la piètre qualité de l'air intérieur, laquelle peut entraîner des problèmes de santé, des allergies et de l'inconfort chez les occupants d'une maison, la capacité d'offrir à leurs clients un ensemble pour l'amélioration de la qualité de l'air intérieur constitue un réel avantage commercial pour les constructeurs. En faisant le minimum d'efforts, un constructeur ou un fabricant peut se créer un ensemble lui permettant d'offrir à ses clients une habitation salubre à moindres frais. La plus grande partie des éléments de ce genre d'ensemble permet non seulement d'améliorer la qualité de l'air intérieur, mais présente également un grand intérêt pour les marchés. Les constructeurs et les fabricants qui optent pour ces ensembles se retrouvent en bonne position pour se démarquer de la concurrence. Ils seront en mesure de profiter de la demande faite par les propriétaires de demeures, demande qui ne pourra que croître à l'avenir.

Principaux éléments de l'amélioration de la qualité de l'air intérieur

On trouvera ci-après les éléments, classés par ordre d'importance, inclus dans l'élaboration d'un ensemble servant à améliorer la qualité de l'air intérieur :

1. ÉLIMINER : La première étape consiste à éliminer entièrement les polluants à l'intérieur des espaces habitables en remplaçant les matériaux problématiques par d'autres.

2. SÉPARER : S'il s'avère impossible d'éliminer certains matériaux, on peut arriver à les séparer des espaces habitables en scellant la surface de ceux-ci.

Nota : Dans le cas des étapes 1 et 2, tâchez de vous concentrer sur les éléments relatifs aux plus grandes superficies. Les émissions provenant des matériaux ont habituellement un rapport direct avec les superficies.

3. VENTILER : Après avoir pris toutes les mesures pour empêcher les polluants de provoquer la dégradation de l'air intérieur, le recours à un bon système de ventilation va permettre d'atténuer les effets des autres produits nocifs. Il sera alors possible de faire pénétrer de l'air frais dans les espaces habitables tout en laissant évacuer l'air confiné des secteurs à forte concentration de polluants

Simple Steps to Improved IAQ

The R-2000 Technical Requirements have a specific section on improved IAQ. The R-2000 Technical Requirements' Section 8 (attached) has eight measures that if followed and supplemented with a good ventilation system will ensure good air quality—this can be used to provide a good initial IAQ upgrade package. Also attached is the R-2000 procurement list which provides a preliminary list of manufacturers of products that meet the R-2000 requirements—please note that this list is not comprehensive and is in no way an endorsement of any specific product or company; it merely provides a starting point for those looking for healthy materials.

Following the three fundamental elements listed above, and referencing the R-2000 Technical Requirements, the following are simple steps to creating an IAQ upgrade package:

1. ELIMINATE:

a) Carpet: Carpet is a pollutant "sink" that traps pollutants and releases them slowly over time. Carpet backing, underpadding and adhesives are also often primary sources of pollutants. Eliminating or minimizing carpetted area is therefore desirable. Carpet should be replaced with hard surface flooring (which can be covered with area rugs by home owners, if desired—area rugs are easier to clean and replace).

b) Vinyl Sheet Flooring: Vinyl sheet flooring is the largest producer of VOCs (volatile organic compounds) in a typical house and should be eliminated.

Flooring Alternatives:

- hardwood flooring
- softwood flooring
- laminate wood flooring
- ceramic tile
- vinyl composite tile
- cork
- marble
- linoleum

c) Particleboard Underlayment: Particleboard should meet specific requirements for formaldehyde content or should be sealed with an approved sealer (see *Separate* below) or should be replaced with an alternative material.

d) Particleboard in Cabinets: Cabinets that do not use particleboard should be selected (e.g. use solid wood), or particleboard meeting specific requirements should be used, or exposed surfaces should be sealed (see *Separate* below).

Particleboard Requirements:
- E-12 European standard
- HUD standard
- ANSI A208.1-1993

2. SEPARATE:

1) Building Envelope: Separating the indoor space from the outdoor space provides a controllable living space that can keep out outdoor pollutants. The good practice of building an airtight envelope to R-2000 standards therefore has IAQ benefits in addition to its energy and comfort advantages.

2) Paints and Varnishes: All liquid coatings used indoors except on wood floors should be water-based, interior type, or meet the Environmental Choice standards.

3) Wood Floor Finishes: All liquid coatings on wood flooring should meet Environmental Choice standards or be prefinished.

4) Sealants: Sealants used on particleboard or other offgasing materials should be Environmental choice approved or be low-toxicity sealers.

3. VENTILATE:

1) Air Exchanger: A properly installed and ducted air exchanger (e.g. HRV or ERV) ensures continuous supply of fresh air and exhaust of stale air. Further, proper installation also ensures that this fresh air is delivered directly to specific living areas and that stale or humid air is exhausted from high pollutant and wet areas. The use of an Energy Recovery Ventilator (ERV) can also allow improved control of indoor humidity levels. HRVs and ERVs can likely be more easily sold for their IAQ merits than their energy advantages—all new housing should be constructed with proper ventilation, whether the house is R-2000 or not.

2) Filtration: The installation of a ventilation system also allows for the filtration of the air. Houses without forced-air systems can achieve this filtration with the HRV/ERV. Houses with forced air systems should provide a furnace filter of at least medium efficiency with a minimum 10% ASHRAE average dust spot efficiency.

Note: Manufacturers with products meeting the above criteria (i.e. those listed in the R-2000 technical requirements) can be found in the attached R-2000 Procurement List.

Final Comments

Once compiled, an IAQ upgrade package is a simple but sure-to-be-popular addition to a builder's/manufacturer's repertoire. Little (if any) extra cost is necessary, as substitute materials need not be more expensive than those they replace. This is particularly true where wood floors and non-vinyl flooring are already the aesthetic preference of the customer. IAQ issues are becoming more and more important to home buyers—the opportunity for the progressive builder is obvious.

Other References

The following publications list specific products meeting good IAQ standards:

Canada Mortgage and Housing Corporation (1995). Building Material for the Environmentally Hypersensitive. Canada Mortgage and Housing Corporation, Ottawa, Ontario.

Rousseau, David and Kim LeClair (1992). Environmental By Design. Hartley and Marks, Vancouver, B.C.

The following publication lists generic products for meeting good IAQ standards:

Energy Pathways (1994). Environmental Choices for Home Builders and Renovators. Canadian Home Builders' Association, Ottawa, Ontario.

R-2000 requires that 2 of the elements listed in Section 8 be used to improve IAQ. If all are used, a ventilation credit is given, facilitating meeting the R-2000 energy budget. ***In the case of creating an IAQ Upgrade Package, it is recommended that all of the requirements listed in Section 8 be met.***

R-2000 HOME PROGRAM TECHNICAL REQUIREMENTS:SECTION 8

8. INDOOR AIR QUALITY

i) Carpeting; carpeting (except as noted) shall be labelled under the Canadian Carpet Institute's Green Label Program and shall cover no more than 50% of the interior floor area. The interior floor area includes the basement floor area. The following floor coverings are exempt: wool or cotton area rugs, and carpeting that has latex-free backing. These (exempt) floor coverings shall not be glued to the floor and cannot have underpads.

ii) Air filtration; a medium efficiency air filter with a minimum 10% ASHRAE average dust spot efficiency shall be installed where air circulating heating, cooling or heat recovery ventilation systems are used.

iii) Paints and Varnishes; all liquid coatings used indoors except on wood floors, are to be water based, interior type or meet or exceed Environment Canada Environmental Choice standards. Prefinished items are allowed.

iv) Flooring Adhesives; all finish flooring adhesives to be either water dispersion, low toxicity formulations or pre-adhesive types.

v) Kitchen cabinets and bathroom vanities; cabinets and vanities shall be solid wood or if made from manufactured wood products shall be made from formaldehyde-free fibre board; or particleboard meeting the E-1 European standard of the HUD Standard, 24 CFR Part 3280.308; or have all exposed surfaces sealed with an Environmental Choice approved sealer or a low toxicity sealer.

vi) Wood flooring; all liquid coatings used on wood flooring shall meet or exceed Environment Canada Environmental Choice standards (for paints) or be prefinished.

vii) Vinyl flooring; all vinyl flooring shall be either linoleum or synthetic vinyl tile. Sheet vinyl flooring shall not be used.

viii) Particleboard Underlayment; all particleboard flooring underlayment shall meet the E-1 European standard or the ANSI A208.1-1993 Table B standard; or have all surfaces sealed with an Environmental Choice approved sealer or a low toxicity sealer; or be prefinished.

PROCUREMENT LIST FOR THE R-2000 PROGRAM

DRAFT

This list is intended to provide information for the purchase of products that meet or exceed the R-2000 Technical Requirements. This list is not comprehensive and will be updated periodically as new information is received. Companies that wish to have products considered for this list, may submit product information to Mr. Gary Sharp, R-2000 Program, Natural Resources Canada, 580 Booth St., 15th Floor, Ottawa, Ontario, K1A 0E4, tel: (613)943-8291, fax: (613)943-1590.

CARPETS

Consistent with Section 8.1.v of the April 1994 R-2000 Technical Requirements, the carpeting materials in this section contain no glues, have no underpad, (or have one that is low in toxicity).

Atlantic Provinces

Crossley Carpet Mills
435 Willow St.
P.O. Box 745
Truro, NS
B2N 5G2
tel: (902)895-5491
1-800-667-8181
fax: (902)893-1625

Québec

Gaskell Carpets Ltd.
6660 Côte de Liesse
Ville St. Laurent, PQ
H4T 1E3
tel: (514)341-6181
fax: (514)464-6039

Perfection Rug Co. Ltd.
4221 St.Catherine St.W.
Westmount, PQ
H3Z 1P6
tel: (514)939-2400
fax: (514)939-1544

Ontario

Colin Campbell & Sons
Ontario Regional Office
Toronto, ON
tel: (416)857-4598
fax (416)857-6593

Creation Baumann
302 King St. East
Toronto, ON
M5A 1K6
tel: (416)869-122.
fax: (416)869-0428

Crossley Carpet Mills
Ontario Regional Office
Toronto, ON
tel: (416)677-8701
fax: (416)677-5206

Floortech Systems
321 Don Park Rd. #8
Markham ON
M5R 2K9
tel: (416)475-6578
fax: (416)475-7569

Floorworks
115 Dupon St
Toronto, On
M5R 1V4
tel: (416)961-6891
fax: (416)961-6891

Gaskell Carpets Ltd.
Ontario Regional Office
Toronto, ON
tel: (416)857-4598
fax: (416)857-6593

Godfrey Hirst Australia
Imported by Floorworks
4700 Hall Rd
Carlsbad Springs, ON
K0A 1K0
tel: (613)786-1215
fax: (613)822-1645

Perfection Rug Co. Ltd.
Ontario Regional Office
Toronto, ON
tel: (416)920-5900
fax: (416)924-4170

Ruckstuhl (Switzerland)
Imported by Baumann Fabrics
302 King St. East
Toronto ON
M5A 1K6
tel: (416)869-1221
fax: (416)869-0428

Triathlon Carpets
P.O. Box 30045
Etobicoke, ON
M9W 6T1
tel:(416)564-2343
fax: (416)564-2106

Manitoba

Floorworks
Central Carpet Corporation
329 Cumberland Ave.
Winnipeg, MN
R3B 1T2
tel: (204)944-9688
fax: (204)942-1663

Saskatchewan

Erv Parent Co. Ltd.
1251 Winnipeg St.
Regina, SK
S4B 1K1
tel: (306)721-2383
fax: (306)721-2454

Alberta

Andy Miller and Associates
220 Midlake Blvd. SE
Calgary, AB
T2X 1K6
tel: (403)254-0309

Colin Campbell & Sons
1330-11th Ave. SW
Calgary, AB
T3C 0M6
tel: (403)245-9222
fax: (403)245-4408

Erv Parent Co, Ltd.
7523 Flint Road SE
Calgary, AB
T2H 1G3
tel:(403)253-3145
fax: (403)255-1127

Erv Parent Co.Ltd
11624-49th St.
Edmonton, AB
T5M 1X1
tel: (403)453-3466
fax: (403)252-8486

British Columbia

Colin Campbell & Sons
202-1717 W. 5th Ave.
Vancouver, BC
V6J 2758
tel: (604) 734-2758
fax: (604) 734-1512

Creation Baumann
2075 Alberta St.
Vancouver, BC
V5Y 3K2
tel: (604)873-0514
fax: (604)873-0194

Crossley Carpet Mills Ltd
150-10451 Shellbridge Way
Richmond, BC
V6X 2W8
tel: (604)273-9171
fax: (604)273-0935

Erv Parent Co. Ltd
791 Caldew St.
Annacis Industrial Park
New Westminister, BC
V3M 5S3
tel: (604)525-4142
fax: (604)525-3777

Gaskell Carpets Ltd. (UK)
Imported by Colin Campbell & Sons
202-1717 W. 5th Ave.
Vancouver, BC
V6J 1P1
tel: (604)734-2758
fax: (604)734-1512

U.S.A.

Cavalier Bremworth Ltd. (New Zealand)
Imported by Bremworth Carpets
1776 Arnold Industrial Way
Concord, CA
94520, USA
tel: (510)798-7242

Collins & Aikman
Floor Coverings Division
311 Smith Industrial Blvd.
Dalton, GA
30722-1447, USA
tel: 1-800-241-4085

Image Carpet
P.O. Box 5555
Armuchee GA
30105, USA
tel: 1-800-722-2504
fax: (404) 234-3464

Jack Lenor Larsen
41 E 11th St.
New York, NY
10003-4685, USA
tel: (416)869-1221
fax: (416)869-0428

Merida Meridian Inc.
360 W. Genessee St.
Syracuse, NY
13201-1071, USA
tel: (315)422-4921

Tintawn (Ireland)
Imported by Tintawn Carpets
964 Third Ave.
New York, NY
01022, USA
tel: (212)355-5030
fax: (212)644-8359

Van Besouw KVT (Holland)
Imported by Van Besouw BV/KVT International Ltd.
240 Peachtree St., #4G5
Atlanta, GA
30303, USA
tel: (404)525-6643

AIR FILTRATION

Consistent with Section 8.1.ii of the April 1994 R-2000 Home Program Technical Requirements, the following air filters have a minimum 10% ASHRAE average dust spot efficiency. These filters are to be installed where air circulating, heating, cooling and ventilation systems are used.

Atlantic Provinces

Environment Air Ltd.
P.O. Box 10
Cocagne, NB
E0A 1K0
tel: (506)576-6672
fax: (506)576-9838

Québec

Venmar Ventilation Inc.
1715 Haggerty
Drummondville, PQ
J2C 5P7
tel: (819) 477-6226
fax: (819)474-3066

Farr Inc.
2785 rue Francis-Hughes
Laval, PQ
H7L 3J6
tel: (514)384-6401
fax: (514)662-6035

Ontario

Broan Manufacturing
1140 Tristan Rd.
Mississauga, ON
L5T 1H9
tel: (905)670-2500
Available through major wholesalers or retailers.

Carter Day Industries (Canada) Ltd.
Newmarket Branch
322-1091 Gorham St.
Newmarket ON
L3Y 7V1
tel: (905)853-7020
fax: (905)852-1975

Century Environmental Systems
2249 Sussex Ct.
Burlington, ON
L7P 3R8
tel: (416)336-3702
fax: (416)332-5956

Electro-Air Canada Ltd.
351 North Rivermede Rd.
Concord, ON
L4K 3N2
tel: (905)669-5620 or 1-800-267-8305
fax: (905)669-5356

Electro-Air Canada Ltd.
Five Seasons Comfort Ltd.
351 North Rivermede Rd.
Concord, ON
L4K 3N2
tel: (905)663-7693
fax: (905)669-5356

Emtrol Ltd.
11 Progress Ave.
Scarborough, ON
M1P 4S7
tel: (416)298-0988

Farr Inc.
Ontario Branch
5605 McAdam Rd.
Mississauga, ON
L4Z 1N4
tel: (905)890-1040
fax: (905)890-5818

Nutech Energy Systems Inc.
511 McCormick Blvd.
London, ON
N5W 4C8
tel: (519)457-1904
fax: (519)457-1676

Source-Vac Inc.
21 Regan Rd.
Brampton, ON
L7A 1C5
tel: (416)840-4300
fax: (416)840-4855

Manitoba

Carter Day Industries (Canada) Ltd.
1425 Whyte Ave.
PO Box 488
Winnipeg MB
R3C 2J6
tel: (204)786-5781
fax: (204)783-9404

Farr Inc.
Manitoba Regional Office
583- Plinquet St
Winnipeg, MB
R2J 0G3
tel: (204)233-4632
fax: (204)233-0004

Saskatchewan

Conservation Energy Systems Inc.
2525 Wentz Ave.
Saskatoon, SK.
S7K 2K9
tel: (306)242-3663
fax: (306)243-3484

Alberta

Carter Day Industries (Canada) Ltd.
Calgary Branch
15-6130 - 4 St. SE
Calgary, AB
T2N 2B6
tel: (403)253-6309
fax: (403)259-5291

British Columbia

Allied Blower & Sheet Metal Ltd.
Carter Day Industries (Canada) Ltd.
12224-103A Ave.
Surrey BC
V3V 3G9
tel: (604)524-8691
fax: (604)581-4159

BC Air Filter Ltd.
2809 Norland Ave.
Burnaby, BC
V5B 3A9
tel: (604)291-2544
fax: (604)291-2510

Farr Inc.
4350 Halifax St.
Burnaby, BC
V5C 3X5
tel: (604)299-8804
fax: (604)299-4372

U.S.A.

Broan Manufacturing. Co. Inc.
926 West State St.
Hartford, WI
53027,USA
tel: (414)673-4340
Available through major wholesalers or retailers.

Honeywell Inc.
1985 Douglas Dr. North
Golden Valley, MN
55422, USA
tel: (612)542-3356
Available through major wholesalers or retailers.

RAYDOT Incorporated
145 Jackson Ave.
P.O. Box 728
Cokato, MN
55321, USA
tel: (612)286-2103

PAINTS AND VARNISHES

Consistent with Section 8.1.iii of the R-2000 Home Program Technical Requirements, the following materials are liquid coatings to be used indoors, except on wood floors. These materials are water-based, interior type, and meet or exceed the Environment Canada Environmental Choice Standards.

Atlantic Provinces

P.S. Atlantic Ltd.
69 Glencoe Drive
Mount Pearl, NF
A1N 4S6
tel: (709)747-5432
fax: (709)747-3425
Available in Paint Shop stores in Nfld.

Tibbetts Paints Limited
Glas Street
Trenton, NS
B0K 1X0
tel: (902)752-8301
fax: (902)755-3425

Québec

Benjamin Moore & Company Ltd.
9393 St. Michèle
Montreal, PQ
H1Z 3H3
tel: (514)321-3330
fax: (514)321-7382

Bétonel Limited
8600 de L'Epée
Montreal, PQ
H3N 2G6
tel: (514)273-8855
fax: (514)273-7391
Available through Betonel franchises

DRAFT

[illegible] Limitée
[illegible] Bagnon St.
[illegible], PQ
H1P 1Z1
tel: (514)328-2727
fax: (514)328-9635

Dural
550 Marshall Avenue
Dorval, PQ
H9P 1C9
tel: (514)636-6230
fax: (514)631-7737
Available through Price Club, Home Hardware, Zellers, and various decorating centres, hardware stores and independent retailers.

International Paints (Canada) Ltd.
19500 Trans Canada Highway
Baie d'Urfe, Québec
H9X 3S8
tel: (514)457-4155
fax: (514)457-4061

MF Paints
1605 Dagenais Boulevard West
St-Rose-Laval, PQ
H7L 5A3
tel: (514)628-3831
fax: (514)628-6221
Available through hardware store in the provinces of PQ and ON.

Peinture Château Inc.
440 Beaumont Avenue West
Montreal, PQ
H3N 1T7
tel: (514)495-1713
fax: (514)495-4330

Peintures UCP Inc.
1785 Fortin Boulevard
Laval, PQ
H7S 1P1
tel: (514)381-9217
fax: (514)668-9553

Sico Inc.
5205 de la Métropole
Longueuil, PQ
J4G 1E5
tel: (514)527-5111
fax: (514)646-7699

Société Laurentide Inc.
4660 12th Avenue
Shawinigan South, PQ
G9N 6T5
tel: (819)537-6636
fax: (819)537-5293
Available in PQ and NB through various retailers.

Ontario

Beaver Lumber Company Limited
1195 Courtney Park Drive
Mississauga, ON
L5T 1R1
tel: (416)670-3999
fax: (416)670-3916
Available at all Beaver Lumber stores.

Benjamin Moore & Company Ltd.
139 Mulock Avenue
Toronto ON
M6N 1G9
tel: (416)766-1173
fax: (416)766-9677

Color Your World
10 Carson Street
Toronto, ON
M8W 3R5
tel: (416)259-3251
fax: (416)259-8866
Available at all Color Your World outlets.

Home Hardware Stores Ltd.
P.O. Box 250
1 Brian Drive
Burford, ON
N0E 1A0
tel: (519)449-2441
fax: (519)449-5789

Homecare Building Centres Ltd.
6470 Viscount Road
Mississauga, ON
L4V 1H5
tel: (416)671-2424
Available through Homecare Building Centres in Ontario.

ICI Paints (Canada) Inc.
8200 Keele Street
Concord ON
L4K 2A5
tel: (416)669-1020
fax: (416)669-3459

LePage's Limited
50 West Drive
Brampton ON
L6T 2J4
tel: (416)459-1140
fax: (416)453-8671
Available through Pro-Hardware Stores, Marchands Unis, Rona, Sordisco stores, and Totem Building Supply.

MF Paints
1605 Dagenais Boulevard West
St-Rose-Laval, PQ
H7L 5A3
tel: (514)628-3831
fax: (514)628-6221
Available through hardware store in the provinces of Québec and Ontario.

Niagara Paint & Chemical Co. Ltd.
P.O. Box 402
Hamilton L.C.D. #1
Hamilton, ON
L8L 7W4
tel: (416)522-4604
fax: (416)572-6177
Available through Waterdown Interiors.

Para Inc.
11 Kenview Blvd.
Brampton ON
L6T 5G5
tel: (416)792-0904
fax: (416)792-1090
Available Canada-wide except British Columbia.

Sodisco Group Inc.
3232 White Oak Road
P.O. Box 2485
London, ON
N6A 4G8
tel: (519)686-2200
fax: (519)686-2226
Available through Pro-Hardware, Do It centres, Unitotal stores, Novico, and Mat Expert.

Sears Canada Inc.
222 Jarvis Street
Toronto, ON
M5B 2B8
tel: (416)941-2958
fax: (416)941-3367
Available through all Sears department stores.

St. Clair Paint and Wallpaper Ltd.
2600 Steeles Ave West
Concord, ON
L4K 3C8
tel: (416)738-0080
fax: (416)738-5121
Available in AB, SK, MN, ON, NS, NF through St. Clair stores.

Northern Paint Canada Inc.
394 Gertrude Avenue
P.O. Box 219
Station C
Winnipeg, MN
R3M 3S8
tel: (204) 475-9400
fax: (204) 453-6731
Available in Ontario through Totem Lumber, McDiarmid Lumber.

Manitoba

Northern Paint Canada Inc.
394 Gertrude Avenue
P.O. Box 219
Station C
Winnipeg, MN
R3M 3S8
tel: (204) 475-9400
fax: (204) 453-6731

Saskatchewan

Inter-provincial Cooperative Ltd.
P.O. Box 1050
Saskatoon, SK
S7K 3M9
tel: (306)244-3412
fax: (306)244-3403
Available through Co-Op stores.

Revelstoke Home Centres Limited,
29985 96th Avenue
Langley, BC
V3A 4P8
tel: (604)888-4111
Available in SK through Revelstoke Home Centres

Alberta

Northern Paint Canada
394 Gertrude Avenue
P.O. Box 219
Station C
Winnipeg, MN
R3M 3S8
Alberta Regional Offices:
Calgary (403)253-8443
Edmonton (403)451-6438.

Cloverdale Paint
6950 King George Highway
Surrey, BC
V3W 4Z1
tel: (604) 596-6261
Available in AB through all Cloverdale Paint Stores.

Revelstoke Home Centres Limited,
29985 96th Avenue
Langley, BC
V3A 4P8
tel: (604)888-4111
Available in AB through all Revelstoke Home Centres

British Columbia

Cloverdale Paint
6950 King George Highway
Surrey, BC
V3W 4Z1
tel: (604)596-6261
fax: (604)597-2677

Benjamin Moore & Company Ltd.
Western Canada Regional Office
Vancouver, BC
tel: (604)857-0600
fax: (604)857-0700
Available at Co-Op stores

General Paint Ltd.
950 Raymur Avenue
Vancouver, BC
V6A 3L5
tel: (604)253-3131
fax: (604)253-3136
Available in BC through General Paints, independent retailers and lumber yards.

DRAFT

IRLY Distributors Ltd.
[illegible] 128th Street
[illegible], BC
V3T 4X7
tel: (604)596-1551
fax: (604)597-3693
Available through IRLY Bird Building Centres.

Revelstoke Home Centres Limited
20085 96th Avenue
Langley, BC
V3A 4P8
tel: (604)888-4111
fax: (604)888-1554
Available through Revelstoke Home Centres.

U.S.A.

Fletco Company Inc.
1000-45th St.
Oakland, CA
94608, USA
tel: (510)655-2470
fax: (510)652-0969

PPG Architectural Finishes Inc.
151 Colfax Street
P.O. Box 127
Springdale, Penn.
15144, USA
tel: (412)274-3355
fax: (412)274-3384
Available through Beaver Lumber, Cashway, Pro-hardware, and Canadian Tire stores.

FLOORING ADHESIVES

Consistent with Section 8.1.iv of the April 1994 R-2000 Technical Requirements, all finish flooring adhesives will be either water dispersion or pre-adhesive types, or have zero volatile content.

Ontario

Roberts Company Canada Limited
2070 Steeles Ave.
Bramalea, ON
L6T 1A7
tel: (416)791-4444
fax: (416) 91-1998

AFM Enterprises
308 Memorial Ave.
Thunder Bay, ON
P7B 343
tel: (807)345-2300

British Columbia

Naturhaus (Germany)
Lindquist Marketing
P.O. Box 3542, 33118
Whidden Ave.
Mission, BC
V2V 2T2
tel: (604)826-1547

AFM Enterprises Inc.
Western Canada
Regional Office
Vancouver, BC
tel: (604)392-7119 or
1-800-661-2620
fax:(604) 861-8381

U.S.A.

Auro Organic Paints
(Germany)
Imported by Sinan
Co.,Natural Building
Materials
P.O. Box 857
Davis, CA
95617-0857, USA
tel: (916)753-3104

A.F.M. Enterprises Inc.
1140 Stacy Court
Riverside CA
92507, USA
tel: (714)781-6860
fax: (714)781-6892

Roberts
600 North Baldwin Park
Blvd.
City of Industry, CA
91746, USA
tel: (818)369-7311
fax: (818)369-7318

WF Taylor Co.Inc.,
13360 Excelsior Dr.
Santa Fe Springs, CA
90670, USA
tel: 1-800-397-4583, or
(310) 802-1896
fax: (310)802-2831

Livos Plant Chemistry
(USA)
1365 Rufina Cir.
Santa Fe, NM
97214, USA
tel: (505)438-3448

KITCHEN CABINETS AND BATHROOM VANITIES

Consistent with Section 8.1.v of the April 1994 R-2000 Technical Requirements, kitchen cabinets and bathroom vanities are to be made using manufactured wood products that are formaldehyde-free, or particle board that meets the HUD standard, or have all exposed surfaces sealed with an Environmental Choice water based sealer or a zero volatile content sealer.

Atlantic Provinces

Flakeboard Company
Limited
151 Church St.
P.O. Box 490
St. Stephen, NB
E3L 3A6
tel: (506)466-2370
fax: (506)466-7113

Québec

Forpan Inc.
2700 boul. Industriel
C.P. 5000
Val D'Or, PQ
J9P 5G6
tel: (819)825-6550
fax: (819)825-0785

Levèsque Plywood
Limited
1427 Centre Rd.
Mascouche Heights, PQ
J7L 2L4
tel: (514)477-1964
fax: (514)477-5364

Pan Fibre Inc.
845 J.B. Reid
Mont-Laurier, PQ
J9L 3W3
tel: (819)623-7133
fax: (819)623-7103

Panneaux Décoratifs
Domtar
395 de Maisonneuve O.
11 étage
Montreal, PQ, H3A 1L6
tel: (514)848-6956
fax: (514)848-5124

Panval Inc.
C.P. 340
Sayabec, PQ
G0J 3K0
tel: (418)536-5465
fax: (418)536-3636

Société en Commandite
Tafisa Canada
4660 Villeneuve
Lac-Meganite, PQ
G6B 2C3
tel: (819)583-2930
fax: (819)583-2931

Uniboard Inc.
1195 Lavigerie
Suite 370
Sainte-Foy, PQ
G1V 4N3
tel: (418)659-5240
fax: (418)659-4568

Unipres Inc.
C.P. 2700
Val d'Or, PQ
J0P 6L1
tel: (819)825-6550
fax: (819)825-9372

Ontario

Canac Kitchens Ltd.
360 John Street
Thornhill, ON
L3T 3M9
tel: (905)881-2153
fax: (905)881-9725

Domtar Decorative
Panels
P.O. Box 7500
Huntsville, ON
P0A 1K0
tel: (705)789-9683
fax: (705)789-6655

Flakeboard Distributors
Limited
(Flakeboard Company
Ltd)
800 Dinison St., Unit 4,
Markham, ON
L3R 5M9
tel: (905)475-9830
fax: (905)475-3988.

Levesque Plywood
Limited
222 Prince St.
P.O. Box 10
Hearst, ON
P0L 1N0
tel: (705)362-4242
fax: (705)372-1549

Proboard Ltd.
P.O. [illegible]
Atik[illegible]
P0T 1C0
tel: (807)597-6921
fax: (807)597-5264

Rexwood Products Ltd.
P.O. Box 1840
New Liskeard, ON
P0J 1P0
tel: (705)647-6775
fax: (705)647-6700

Alberta

Blue Ridge Lumber Ltd.
P.O. Box 1079
Whitecourt, AB
T7S 1P9
tel: (403)648-6200
fax: (403)648-6396

British Columbia

CANPAR Industries
2400-555W Hastings St.
P.O. Box 12083
Vancouver BC
V6B 4N5
tel: (604)681-7336
fax: (604)681-8906.

CANPAR Industries
P.O. Box 129
Grand Forks, BC
V0H 1H0
tel: (604)442-5521
fax: (604)442-2577

MacMillan Bloedel
Limited
1075 W. Georgia St.
Vancouver, BC
V6E 3R9
tel: (604)661-8000
fax: (604)661-8377

Northwest Panelboard
P.O. Box 3730
Smithers BC
V0J 2N0
tel: (604)847-4394
fax: (604)847-9687

U.S.A.

Rodman Industries
P.O. Box 76
Marinette, WI
54143, USA
tel: (715)735-9541

SEALERS FOR PARTICLEBOARD

The sealers listed below meet the specifications as stated in section 8.1.v, (water based, or zero volatile content), and are suitable for use on kitchen cabinets and bathroom vanities.

Atlantic Provinces

Livos Plant Chemistry
Imported by Eco-House
(1988) Inc.
P.O. Box 220, Stn. A
Fredericton, NB
E3B 4Y9
tel: (506)366-3529,
fax: (506)366-3577

British Columbia

Fletco Company Inc.
4260 Vanguard
Richmond, BC
V6X 2P5
tel: (604)273-8031
fax: (604)273-6026

Naturhaus (Germany)
Imported by
Lindquist Marketing
P.O. Box 3542
33118 Whidden Ave.
Mission, BC
V2V 2T2
tel: (604)826-1547

U.S.A.

Biofa Naturfarben GmbH
(Germany)
Imported by Bau, Inc
P.O. Box 190
Alton, NH
03839, USA
tel: (603)364-2400

Fletco Company Inc
1000-45th St.
Oakland CA
94608, USA
tel: (510)655-2470
fax: (510)652-0969

Livos Plant Chemistry
(USA)
1365 Rufina Cir.
Santa Fe, NM
97214, USA
tel: (505)438-3448

WOOD FLOORING

Consistent with Section 8.1.vi of the April 1994 R-2000 Technical Requirements, all liquid coatings used on wood flooring shall meet or exceed Environment Canada's Environmental Choice Standards, or be pre-finished.

Québec

Planchers Mercier
46 Rue Montmagny
Québec, PQ
G5V 3L6
tel: (418)248-1785 or
1-800-463-704-8171
fax: (418)248-9126

BonaKemi
Montreal Parquetry
Floors Ltd.
355 Cremazie West
Montreal, PQ
H2N 1M1
tel: (514)384-4695

BonaKemi
Bois Franc de la Capitale
1375 Boul. Charest O.
Québec, Québec
G1N 2E7
tel: (418)681-4648

BonaKemi
Painture of Ciment de
l'Estrie
819 Chaliboux
Sherbrooke, PQ
J1G 1R7
tel: (819)569-4368

BonaKemi
Centre du Plancher 640
Inc.
560 rue Dubois
St. Eustache, PQ
J2P 4W9
tel: (514)491-5655

Ontario

General Polymers East
700-Norah Cres.
Thunder Bay, ON
P7C 4T8
tel: (807) 626-9752

AFM Enterprises Inc
Silver Mountain
308 Memorial Ave.
Thunder Bay, ON
P7V 3Y2
tel: (807)345-2300

BonaKemi
Huron Flooring
312 Savereign Road
London, ON
N6M 1A7
tel: (619)451-5341

BonaKemi
Huron Flooring
433 S. Palmerston
Sarnia, ON
N7T 3P4
tel: (519)337-8808

BonaKemi
Design Building Centre
1216 Dawson Road
Thunder Bay, ON
P7B 5E3
tel: (807)767-5006

BonaKemi
Barwood Sales
220 Midwest Road
Scarborough, ON
M1P 3A9
tel: (416)751-7811

Manitoba

BonaKemi
Hsrdwood Flooring
Importers
1180 Fife Street
Winnipeg, MB
R2X 2N6
tel: (204)339-0281

Saskatchewan

BonaKemi
G.R. Distributors
1260 McDonald Street
Regina, Saskatchewan
S4N 4X6
tel: (306)569-3422

Alberta

BonaKemi
Hardwood Flooring
Importers
5919 5th Street S.E.
Calgary, AB
T2H 1L5
tel: (403)255-8775

BonaKemi
Hardwood Flooring
Importers
1432 112th Avenue
Edmonton, AB
T5M 2V3
tel: (403)455-5454

British Columbia

AFM Enterprises
BC Regional Office
Kootenay
Box 848
Nelson, BC
V1L 6A5
tel: (604) 352-2001

BonaKemi
Hardwood Flooring
Importers
4-3611 Viking Way
Richmond, BC
V6V 1W1
tel: (604)273-1699

U.S.A.

General Polymers
145 Caldwell Dr.
Cincinnati, OH
45216, USA
tel: (513)761-0011
fax: (513)761-4496

General Polymers West
12355 Gladstone Ave
Silmore, CA
91342, USA
tel: 1-800-624-5041

A.F.M. Enterprises Inc.
1140 Stacy Court
Riverside, CA
92507, USA
tel: (907)781-6860
fax: (907)781-6892

BonaKemi USA, Inc.
14805 E. Moncrieff
Place
Aurora, CO
80011, USA
tel: (303)371-1411
1-800-872-5515
fax: (303)371-6958

WATER CONSERVATION

Consiste[illegible] DRAFT
9.1 of t[illegible]
2000 Technical
Requirements, installed fixtures shall meet with the following criteria:
Toilets: Water-saver or ultra-low flush; using 13.25 Liflush or less.
Showerheads: Low-flow; using less than 12 litres per minute.
Faucets: Low-flow; using less than 10 litres per minute.

Atlantic Provinces

Kohler
Ideal Plumbing Inc.
1180 St. George Blvd.
Moncton, NB
E1C 8M5
tel: (506)853-1444
fax: (506)853-1448

Eljer
Emco Distribution
Group
Atlantic Regional Office
90 Wright Avenue
Dartmouth, NS
B2Y 3Z6
tel: (902-468-2836
fax: (902)468-2742

Québec

Crane Canada Ltd.
P.O. Box 2700
Montreal, PQ
H4L 4Y7
tel: (514) 735-3592
fax: (514)340-9173
Branch offices in most principal Canadian cities.

Eljer
Emco Distribution
Group
Eastern Regional Office
1820-46e avenue
Lachine, PQ
H8T 2P2
tel: (514)636-9220

Kohler
Ideal Plumbing Supplies
[illegible]0-19th Avenue
[illegible]ontreal, PQ
[illegible]1Z 4J4
tel: (514)593-8521
fax: (514)593-8344

Kohler
LaCroix Decor
1240 Boul. Charest O.
Québec, Québec
G1N 2E3
tel: (418)683-4771
fax: (418)681-1431

Kohler
Matériaux de Plomberie
PMF Inc.
7245 St. Jacques O.
Montreal, Québec
H4B 2V3
tel: (514)484-8002
fax: (514)484-2519

Ontario

American Standard
1401 Dupont St.
Toronto, ON
M6H 2B1
tel: (416) 536-1078
fax: (416)535-2493

Crane Canada Ltd.
12 Vulcan St.
Rexdale, Ontario
M9W 1L2
tel: (416)249-9191

Eljer
Emco Distribution
65 Huxley Road
Toronto, ON
M9M 1H5
tel: (416)742-6220
fax: (416)747-1262

Interbath of Canada Ltd.
5556 Tomken Rd.
Mississauga, ON
L4W 1P4
tel: (416)624-3009
fax: (416)624-0796
Available through Beaver Lumber, Cashway stores

JB Allen
140 Turnbull Court
Cambridge, ON
N1R 8E6
tel: (519)623-7940
fax: (519)623-1235

Kohler Limited
110 Woodbine Downs
Blvd., Unit 3
Etobicoke, ON
M9W 5S6
tel: (416) 798-9311
fax: (416)798-9181

Kohler
Emco Supply Ltd
944 Leathorne Street
London, ON
N5Z 3M5
tel: (519)686-7340
fax: (519)686-4607

Kohler
Ideal Plumbing Supplies Ltd
200 Barmac Drive
Weston, ON
M9L 2X8
tel: (416)740-4811
fax: (416)740-6887

Kohler
Niagara Plumbing Supply
4300 Stanley Ave
Niagara Falls, ON
L2E 6T7
tel: (416)354-7424
fax: (416)354-5706

Kohler
Penmar Plumbing
131 Marycroft Ave
Woodbridge, ON
L4L 5X6
tel: (416)856-4455
fax: (416)856-4458

Kohler
PMF Inc
3-1775 Bonhill Drive
Mississauga, ON
L5T 1C8
tel: (416)795-8077
fax: (416)795-8104

Teledyne Water Pik Canada
35 Grand Marshal Drive
Scarborough ON
M1B 5W9
tel: (416)284-1393
fax (416)284-8757

Manitoba

Kohler
Robinson Bath Centre
1260 Sargent Ave.
Winnipeg, MB
R3E 0G1
tel: (204)784-0053
fax: (204)772-4796

Alberta

Crane Canada Ltd.
#116-14315 118th Ave.
Edmonton, AB
tel: (403)451-6644

Eljer
Bartle & Gibson Co. Ltd
13475 Fort Road
Edmonton, AB
T5A 1C6
tel: (403)476-2850
fax: (403)476-6434

Eljer
Frontier Plumbing & Heating
5720 - 1st St. SW
Calgary, AB
T2H 0E2
tel: (403)252-6671
fax: (403)252-6039

Eljer
Emco Distribution Group
Western Regional Office
14940-121A Avenue
Edmonton, AB
T5V 1A3
tel: (403)451-2830
fax: (403)451-0919

Kohler
The Ensuite Western Supplies Ltd.
14635-121A Avenue
Edmonton, AB
T5L 2T2
tel: (403)454-9551
fax: (403)454-9565

Kohler
The Ensuite Western Supplies Ltd.
633-28 Street N.E.
Calgary, AB
T2A 4L6
tel: (403)273-2200
fax: (403)273-6489

British Columbia

Crane Canada Ltd.
4608 Canada Way
Burnaby, BC
V5G 1K5
tel: (604)294-8471

Eljer
Frontier Plumbing & Heating
2835 East 12th Ave.
Vancouver, BC
V5M 4P9
tel: (604)253-4000
fax: (604)253-4003
Also available through Emco Distribution Centres.

Eljer
Westburne Industries Ltd
873 Cloverdale
P.O. Box 4279, Stn A
V8X 3X8
tel: (604)384-9341
fax: (604)380-1353
Also available through Emco Distribution Centres.

Eljer
Bartle & Gibson Co. Ltd
705 East 17th Ave.
Vancouver, BC
V5V 1E8
tel: (604)856-3311
fax: (604)876-0716
Also available through Emco Distribution Centres.

Kohler
The Elegant Bath Gallery
377 West 8th Ave.
Vancouver, BC
V5V 1L1
tel: (604)873-0004

Kohler
BC Plumbing Supplies
8000 Winston Street
Burnaby, BC
V5A 2M5
tel: (604)420-3737
fax: (604)420-7928

Kohler
The Ensuite Western Supplies Ltd.
2750 Rupert Street
Vancouver, BC
V5M 3T7
tel: (604)439-9576
fax: (604)433-3819

MATERIALS CONSERVATION

insulation DRAFT

Consistent with Section 9.2 of the April 1994R-2000 Technical Requirements, the following criteria apply:

fibre glass: containing a minimum of 50% recycled content

cellulose: containing 100% recycled material

mineral: containing a minimum of 50% recycled content

Atlantic Provinces

cellulose:

Prosumex Inc.
820 Ellingham Street
Pointe-Claire, PQ
H9R 3S4
tel: (514)694-1485 or
1-800-363-7876
fax: (514)694-3999
Available in NB through insulation contractors.

Québec

cellulose:

Prosumex Inc.
820 Ellingham Street
Pointe-Claire, PQ
H9R 3S4
tel: (514)694-1485 or
1-800-363-7876
fax: (514)694-3999
Available in Québec through insulation contractors.

mineral:

Roxul
551 Harrop Drive
Milton, ON
L9T 3H3
tel: (905)878-8474
Available in Québec through Rona/Dismat stores, Dispro, BMR stores and PAL stores.

Ontario

cellulose:

[illegible] Inc.
[illegible] Ellingham Street
Pointe-Claire PQ
H9R 3S4
tel: (514)694-1485 or
1-800-363-7876
fax: (514)694-3999
Available in Ontario through insulation contractors.

Climatizer Insulation Inc.
120 Claireville Dr.
Etobicoke, ON
M9W 5Y3
tel: (416)798-1235
fax: (416)789-1311

Thermo-Cell Insulation
2015 Lanthier Drive
RR2
Orleans, ON
K1C 1T1
tel: (613)837-9797

mineral:

Roxul
551 Harrop Drive
Milton, ON
L9T 3H3
tel: (905)878-8474
1-800-265-6678.
Available through: Cashway Building Centres, Beaver Lumber, Home Hardware, HomeCare, Lansing BuildAll, Castle Building Centres, Copps Building Centres, Lumber Guy's Stores, Lumber King Stores, Muttart Building Centres, Bytown Building Stores, and Turkstra Building Supply Stores

glass fibre:

Ottawa Fibre Inc.
3985 Belgreen Drive
Box 415 RR#4
Ottawa, ON
K1G 3N2
tel: (613)736-1215
fax: (613)736-1150
Distributed through Canfor-Weldwood

Alberta

cellulose:

Can-Cell Insulation Inc.
16355 130th Ave.
Edmonton, AB
T5V 1K5
tel: (403)447-1255
fax (403)447-1034

British Columbia

cellulose:

Able Mechanical
Insulation Ltd.
8515 152nd St.
Surrey BC
V3S 3M9
tel: (604)597-0100

Advanced Insulation
11943-94th Avenue
Delta, BC
V4C 3R8
tel: (604)589-7997

U.S.A.

cellulose:

International Cellulose
Corp.
P.O. Box 450006
12315 Robin Blvd.
Houston, Texas
77245-0006, U.S.A.
tel: 1-800-444-1252
fax: (713) 433-2029

Louisiana-Pacific
111 S.W. 5th Ave.
Suite #4200
Portland OR
97204, U.S.A.
tel: (503)221-0800
fax: (503)796-0204

American Sprayed Fibers
1550 E. 91st Dr.
Merrillville, IN
46410, USA
tel: 1-800-824-2997

I.F. Industries
1426 Wallace Rd.
Oakville, ON
L6L 2Y2
tel: (416)827-6358
fax: (416)827-9342

mineral:

Partek Insulations Inc.
202-401 Westpark Court
Peachtree City, GA
30269, USA
tel: (404)631-1200

Rock Wool
Manufacturing Co.
203 North 7th Street
Leeds, AL
35094, USA
tel: (205)699-6121

Isolatek International
41 Furnace Street
Stanhope NJ
07874, USA
tel: (201)347-1200

MATERIALS CONSERVATION

roofing:

Roofing systems must contain compatible recycled materials, (metal, paper, wood fibres, plastic, or rubber).

Québec

Les Tuiles de Genève
549 rue Smith
Magog, PQ
J1X 3H5
tel: (514)449-2966
fax: (514)449-2966

Classic Products
17 Church St., Suite 5
Granby, Québec
J2G 4R9
tel: (514)375-4698
Available through Jean Yves Gagne

Ontario

Tile Master Roofing
Systems
Main Roofing
Manufacturing Ltd
1060 Colborne St. E.
Brantford ON
N3T 5M1
tel: (509)756-0861

Gregg Steel Shakes
RR3
Orillia, ON
L3V 6H3
tel: (705)325-3405
fax: (705)325-3020

Crowe Industries Ltd
116 Burris St.
Hamilton ON
L8M 2J5
tel: (416)529-6818
Available through Authentic Roof.

Mair Roofing
Manufacturing Ltd.
1060 Colborne Street E.
Brantford, ON
N3T 5M1
tel: (519)756-0861
fax: (519)752-1139

IKO Industries
40 Hanson Rd. South
Brampton, ON
L6W 3H4
tel: Canfor Weldwood
(416) 277-5151.
Available through Canfor-Weldwood Distribution Ltd

Certain Teed
Corporation
875 Tungsten St.
Thunder Bay, ON
P7B 6H2
tel: (807)344-4884

Nailite International
105 Scott St.
Paris, ON
tel: (519)442-6375

Elad Building Products
104 Meadowbrooke Dr.
London, ON
tel: (905)652-2240

Classic Products Inc.
Barbisan Roofing &
Siding
1304 Airport Rd
Sault Ste. Marie, ON
P6A 5K6
tel: (705)253-1664

Classic Products Inc.
Metal Contracting
Unlimited
4 Abacus Rd., Unit 15
Brampton, ON
L6T 5J6
tel: (905)794-2300

Manitoba

Certain Teed
Corporation
1325 Ellice Ave.
Winnipeg, MB
R3G 0G1
tel: (204)786-6426
Available through Winnipeg Steels Industrial Products

British Columbia

Cemwood
American Cem-wood
Products
3275 McCallan Rd.
Unit #17
Abbotsford, BC
tel: (604)855-4222
Available through Ross Gibson Industries

Ross Gibson Industries
12180 Industrial Ave
Surrey, BC
tel: (604)580-4641

Cemwood
Slegg Construction
496 Admirals Rd.
Victoria, BC
tel: (604)388-5453

Classic Products
Best Way Roofers
Supply
2720 Hwy 97 North
Kelowna, BC
V1X 4J7
tel: (604)763-4405

C-Max Technologies
2140 West 12th Ave.
Vancouver, BC
V6K 2M2
tel: (604)738-0505

U.S.A.

Classic Products
299 Staunton St.
P.O. Box 701
Piqua Ohio
45356, USA
tel: (513)773-9840
fax: (513)773-926

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MATERIALS CONSERVATION

Sheathing/Drywall:

Drywall: Products containing recycled gypsum and newsprint

Ontario

Canadian Gypsum
Company
P.O Box 4034
Terminal A
Toronto, ON
M5W 1K8
tel: (416)595-8800
fax: (416)595-8888

Domtar Gypsum
PO Box 699
Highway 6 North
Caledonia, ON
N0A 1A0
tel: (416)765-0580

Manitoba

Domtar Gypsum
1405 Sargent Avenue
Winnipeg, Manitoba
R3E 0G6
tel: (204)784-2420

Alberta

Domtar Gypsum
403-118th A Avenue NE
Edmonton, AB
T6S 1C6
tel: (403)472-6732

British Columbia

Domtar Gypsum
12509- 116th Avenue
Surrey, BC
V3V 3S6
tel: (604)580-0620

U.S.A.

Louisianna Pacific
111 SW 5th Ave.
Suite 4200
Portland OR
97204, USA
tel: (503)221-0800
fax: (503)796-0204

Highland American Co.
3 Dexter Rd.
East Providence RI
02914, USA
tel: (401)438-4990
fax: (401)438-4993

Furman Lumber Inc.
P.O. Box 130
Nutting Lake, MA
01865, USA
tel: (508)670-3800
1-800-843-9663
fax: (508)670-3999

MATERIALS CONSERVATION

Siding: *Must be made from factory or sawmill waste.*

Atlantic Provinces

Louisianna-Pacific
Canada Ltd.
Postal Bag #2120
Port Hawksbury, NS
B0E 2V0
tel: (902)625-3070
fax: (902)625-3347
Available in Home Improvement stores and lumber yards across Canada.

Québec

Canadian Pacific Forest
Products Ltd
1155 Metcalfe St.
Montreal, PQ
H3B 2X1
tel: (514)878-4811
fax: (514)878-4850

Alberta

Canadian Forest
Products Ltd.
Alberta Operations
Postal Bag 100
Grand Prairie, AB
T8V 3A3
tel: (403)538-7711
fax: (403)538-7800
Available through Canfor-Weldwood

British Columbia

Canadian Forest
Products Ltd.
2800-1055 Dunsmuir
St.
Box. 49420, Bentall Stn
Vancouver, BC
V7X 1B5
tel: (604)661-5241
fax: (604)661-5273
Available through Canfor-Weldwood

MacMillan Bloedel
Champlain Division
P.O. Box 9, Station A
Vancouver, BC
V6C 2L9
tel: (604)439-2260
fax: (604)439-2277
Available in Home Improvement stores and lumber yards across Canada.

MATERIALS CONSERVATION

Fibreboard: *Must contain recycled paper or wood fibres*

Atlantic Provinces

Homasote Company
PO Box 7240
West Trenton, NJ
08628-240, USA
tel: (609)883-3300
fax: (609)530-1584
Available in Eastern Canada by calling: (207) 427-6914, or through Canfor-Weldwood.

Louisiana-Pacific
Guilfords Ltd.
P.O. Box 8486
St. John's, NF
A1B 3N9
tel: (709)368-3114

Louisiana-Pacific
Daigle Lumber Ltd.
161 Caledonia
Moncton, NB
E1C 9N1
tel: (506)858-9220

Louisiana-Pacific
Devon Lumber Ltd.
200 Gibson Ave.
Fredericton, NB
E3A 4E3
tel: (506)458-8657

Louisiana-Pacific
Daigle Lumber
15 Fielding Ave.
Burnside Industrial Park
Dartmouth, NS
B3B 1C9
tel: (902)468-7513

Louisiana-Pacific
Central Supplies
73 Industrial Dr.
Sydney, NS
B1P 6T3
tel: (902)562-7000

Poly Plast
14A Regan St
Brampton, ON
L71 1B9
tel: (905)840-2472

Québec

Canadian Pacific Forest
Products Ltd
1155 Metcalfe St.
Montreal, PQ
H3B 2X1
tel: (514)878-4811
fax: (514)878-4850

Louisiana-Pacific
Daigle Lumber Ltd.
1295 Muten
Boucherville, PQ
J4B 5H2
tel: (514)641-4760

Louisiana-Pacific
Acousti-Plus
180-5275 Hamel Blvd.
Québec, PQ
G2E 5M7
tel: (418)871-4300

Ontario

Homasote Company
P.O. Box 7240
West Trenton
New Jersey
08628-0240, USA
tel: (609)883-3300
fax: (609) 530-1584
Available in Ontario by calling: (416)856-4994 or through Canfor-Weldwood Distribution Limited.

Louisiana-Pacific
Interior Bldg. Supplies
481 Newbold St.
London, ON
N6E 1K4
tel: (519)668-8453

Louisiana-Pacific
Builders Supplies Ltd.
80 Howen Rd
Scarborough, ON
N1R 3E4
tel: (416)757-6248

Louisiana-Pacific
St. Catharine's Bldg.
Supply
126 Granthorn Ave.
St. Catharines, ON
L2P 3H2
tel: (416)668-2111

Louisiana-Pacific
Richard St. Louis
Building Material
90 Bayview St.
Ottawa, ON
K1Y 4L6
tel: (613)728-9578

Tofco Marketing Ltd.
Ontario Regional Office
6800 Hwy #7, RR#1
Woodbridge,ON
L4L 1A5
tel: (416)856-4994
fax: (416)856-4994

Alberta

Homasote Company
P.O. Box 7240
West Trenton, NJ
08628-0240, USA
tel: (609)883-3300
fax: (609)530-1584
Available in Western Canada by calling: (403)256-4474, or through Canfor-Weldwood.

Can Fibre
c/o 301-4503 Kingsway
Burnaby, BC
V5H 2B3
tel: (604)432-1400
Available through Canfor-Weldwood Distribution Ltd

U.S.A.

Homasote Company
P.O. Box 7240
West Trenton, NJ
08628-0240, USA
tel: (609)883-3300
fax: (609)530-1584

Medite Corporation
P.O. Box 4040
Medford, OR
97501,USA
tel (503)779-9596
fax: (503)779-9921

ParTerre America Inc.
2700 Wilson Blvd.
Arlington VA
22201, USA
tel: (703)243-5140
fax: (703)247-3178

MATERIALS CONSERVATION

Waferboard: *Must be made from fast-growing trees.*

British Columbia

Weldwood Waferboard
Weldwood of Canada Ltd
1055 W. Hastings St.
P.O. Box 2179
Vancouver, BC
V6B 3V8
tel: (604)687-7366
fax: (604)662-2858
Available through Canfor-Weldwood Distribution Ltd.

MATERIALS CONSERVATION

studs and trim: *Must be made from sawmill cut-offs.*

Ontario

Poly Plast
14A Regan St
Brampton, ON
L71 1B9
tel: (905)840-2472
Available through Canfor-Weldwood Distribution Ltd.

Premdor Inc
Corporate Marketing
4120 Yonge St.
Willowdale, ON
M2P 2B8
tel:(905)250-8933
fax: (905)250-9269

Alberta

Canadian Forest
Products Ltd.
Alberta Operations
Postal Bag 100
Grand Prairie, AB
T8V 3A3
tel: (403)538-7711
fax: (403)538-7800
Available through Canfor-Weldwood

MATERIALS CONSERVATION

foundation and underslab drainage:

Mix of 40% ground glass in the mixture of conventional drain rock, used under and around the perimeter of the house as a drainage layer.

Canfor-Weldwood Locations:

Head Office

301-4503 Kingsway
Burnaby, BC V5H 2B3
tel: (604)432-1400
fax (604)436-6690

Atlantic Distribution Centres:

Moncton
377 English Drive
P.O. Box 2188 Stn. A
Moncton, NB
E1E 3Y8
tel: (506)853-8991
fax: (506)859-7301

Saint John
P.O. Box 1032
Ashburn Lake Road
Saint John, NB
E2L 4E3
tel: (506)634-1292
fax: (506)633-6169

Dartmouth
120 Ilsley Avenue
Dartmouth, NS
B3B 1S7
tel: (902) 468-8585
fax: (902)468-8009

Deer Lake
Spillway Road
P.O. Box 1030
Deer Lake, Nfld
A0K 2E0
tel: (709)635-3772
fax:(709)635-5826

St. John's
Brookfield Road
P.O. Box 85
St. John's, Nfld
A1C 5H5
tel: (709) 368-3144
fax: (709)368-3572

Québec Distribution Centres:

Montreal
651 Boulevard Industriel
Blainville, Québec
J7C 3V3
tel: (514)435-6911
fax: (514)435-6447

Québec City
170 Liverpool
St.Augustin-de-Desmaures
Québec City, PQ
G3A 2M5
tel: (418)878-6030
fax: (418)878-4626

Ontario Distribution Centres

London
98 Clarke Side Road
London, Ontario
N5W 5H6
tel: (519)455-4340
fax: (514)455-5987

Ottawa
P.O. Box 8530
2811 Sheffield Road
Ottawa, ON
K1B 3V8
tel: (613)745-0156
fax: (613)745-8035

Peterborough
597 The Queensway
P.O. Box 298
Peterborough, ON
K9J 6Y8
tel: (705)743-1942
fax: (705)743-9173

Sudbury
P.O. Box 2545, Stn. A
64 National Street
Sudbury, ON
P3A 4S9
tel: (705)566-0965
fax: (705)566-2839

Toronto
15 West Drive
Brampton, ON
L6T 3T5
tel: (905)457-8500
fax: (905)457-3668

Distribution Centres Prairies

Calgary
4510 76th Avenue S.E.
Calgary, AB
T2C 2V2
tel: (403)279-7710
fax: (403)236-7967

Edmonton
P.O. Box 11330
16011 128 Avenue
Edmonton, AB
T5J 3K5
tel: (403)447-1959
fax: (403)447-2561

Grand Prairie
9515 108th Street
Grande Prairie, AB
T8V 5R7
tel: (403)532-3324
fax: (403)539-4738

Saskatoon
511 47th Street East
Saskatoon, SK
S7K 5B5
tel: (306)933-2500
fax: (306)242-3105

Winnipeg
1431 Church Avenue
Winnipeg, Manitoba
R2X 1G5
tel: (204)633-4890
fax: (204)694-5495

Distribution Centres B.C.

Kelowna
205 Campion Road
Kelowna, BC
V1V 1L8
tel: (604)765-1461
fax: (604)756-8889

Nanaimo
4801 Wellington Road
Nanaimo, BC
V9T 2H5
tel: (604)758-1525
fax: (604)758-3041

Prince George
9499 Pann Road
Prince George, BC
V2N 2K8
tel: (604)561-1747
fax: (604)561-2481

Vancouver
19645 92A Avenue
Langley, BC
V3A 4P8
tel: (604)254-0707
fax: (604)254-0657

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R-2000 HOME PROGRAM TECHNICAL REQUIREMENTS

(Effective January, 1996)
(Including Revisions for Hot2000 V7)

1. PURPOSE

1.1 The R-2000 Home Program Technical Requirements provide the basis for the design and construction of new residential buildings which will be more efficient in the use of energy, improve the level of indoor air quality and address the environmental responsibility aspects of house construction and operation. This can be done through the use of such features as higher envelope insulation, air tightness, orientation, heating, cooling and ventilation as well as the selection of materials and components for use in the home.

1.2 The Requirements are intended to allow flexibility in the selection of thermal resistance values, lighting equipment, appliances (when they are supplied by the builder), cooling, ventilation and heat recovery equipment, and heating equipment for both space and domestic hot water to meet a total home annual energy consumption target for a particular location.

1.3 The Ventilation Systems and Equipment along with the Indoor Air Quality sections of these Technical Requirements are intended to ensure acceptable levels of air quality, adequate venting of combustion products, and control of indoor humidity levels for safety and health.

1.4 The Requirements provide a method by which achievement of the annual energy target can be assessed at the design stage through the evaluation of plans and specifications.

1.5 The Environmental Requirements and Indoor Air Quality Requirements are intended to allow flexibility in the selection of products and components used in the building to promote improved levels of indoor air quality and so the building has a reduced impact on the environment during the construction process and while in operation.

2. SCOPE

2.1 These Requirements apply to ground related low rise housing as per Part 9 of the *National Building Code of Canada* ("N.B.C.") (except as noted in 2.5) to be constructed under the R-2000 Home Program by Registered Builders.

2.2 All houses constructed to these Requirements must comply with local and provincial code(s) or in the absence of such code(s) legislation, to the requirements of the current edition of the *National Building Code of Canada*.

2.3 These requirements are <u>in addition to</u> the requirements of local, provincial or National Building Codes and Standards.

2.4 Recognizing that the R-2000 Home Program is designed to encourage innovation and creativity, these R-2000 Technical Requirements may be amended if changes are identified in advance and agreed to by Canadian Home Builders' Association ("CHBA") and Natural Resources Canada ("NRCan").

2.5 The minimum standard of performance for a multiple unit building with common heated areas, ventilation system or heating system will be agreed upon (between CHBA, NRCan and the Builder) prior to construction.

2.6 CHBA has the responsibility for ensuring equivalency and the authority to accept equivalent methods.

3. MINIMUM ENVELOPE REQUIREMENTS

3.1 In order to maintain thermal comfort, and prevent condensation problems, insulation levels shall not be less than the following nominal values;

Degree Day Zone	Exterior Above Grade Walls		Exterior Below Grade Walls		Insulated Ceiling and Attics	
	RSI	R	RSI	R	RSI	R
Up to 3500	2.8	16	1.8	10	4.7	27
3501 - 6000	3.6	20	1.8	10	5.6	32
6001 - 8000	4.2	24	2.8	16	6.4	36
8001 and over	4.7	27	3.6	20	7.1	40

3.2 Windows shall be at least double glazed with a minimum air space thickness of 12.5mm (0.5 inch) between panes. Metal window frames must be thermally broken except in warm areas where the January 2 1/2% Design Temperature is not less than -12 degrees Celsius.

3.3 Either the Normalized Leakage Area (NLA) of the building envelope shall be no greater than 0.7 cm^2/m^2 (1 sq in/100 ft^2) area of the building envelope or the air change rate at 50 Pa shall be no greater than 1.5 ACH. Either shall be determined according to CAN/CGSB2-149.10-M86 "Determination of the Airtightness of Building Envelopes by the Fan Depressurization Method" or by equivalent methods as approved by CHBA. Additional stipulations on test procedure in 3.4 and 3.5 will supersede these Requirements.

3.4 A dwelling unit shall be tested individually without fan depressurization of any adjacent heated space. Envelope area will include that of building components separating a dwelling unit from other dwelling units, heated space and/or the outdoors.

3.5 Wood stoves and fireplace flues may be sealed for the airtightness test. Temporary sealing of sumps during air tightness tests is not allowed.

4. VENTILATION SYSTEMS AND EQUIPMENT

4.1 Mechanical ventilation systems shall be designed by an HRAI registered Ventilation Installer or Ventilation Designer. Mechanical ventilation systems shall be installed by an HRAI registered Ventilation Installer in accordance with CAN/CSA-F326-M91, Residential Mechanical Ventilation Systems.

4.2 Heat Recovery Ventilators (HRV) permitted for use shall be certified by the Home Ventilating Institute (HVI).

5. COMBUSTION EQUIPMENT

5.1 All gas, propane, and oil-fired space and water heating equipment shall have direct vent (sealed) or induced or forced draft venting systems. Induced draft or forced draft vented systems shall be capable of positive shut-down in the case of venting failure.

5.1.1 The following mechanically vented induced draft (power vented) gas and propane appliances will not be subject to a pressure decrease limit in accordance with CSA F326:

- furnaces without standing pilot lights
- domestic hot water heaters without standing pilot lights
- clothes driers without standing pilot lights, and
- fireplaces with non-openable doors and without standing pilot lights.

5.2 All wood burning appliances including, fireplaces, woodstoves and pellet stoves must be certified as meeting the requirements of either:

1) CSA B415.1-M92 Performance Testing of Stoves, Inserts and Low to Medium Burn Rate Factory Built Fireplaces, or

2) The United States Environmental Protection Agency (EPA) wood burning appliance standards (1990), CFR Part 60.

5.3 Gas and propane fireplaces must be either:

1) Direct-vent (sealed); either top-, or rear-vented
2) Power-venting.

5.4 Fireplaces and chimneys on exterior walls shall be constructed to maintain continuity of the house air barrier and shall be insulated with non-combustible insulation. Air cooled chimneys are not permitted.

5.5 Where ducts that supply combustion air to combustion appliances pass through conditioned space they must be insulated with a minimum of RSI 0.4 (R-2) and have a vapour barrier to avoid condensation on the duct.

5.6 No unvented combustion appliance shall be installed unless specific provision is made to exhaust the products of combustion to the outside.

5.7 Electric domestic water heaters shall either have factory-installed insulation with a minimum RSI of 1.8 (R-10) or have a standby loss of 80 watts or less for a 270 L (60 gal.) tank measured in accordance with CSA C191 Series M1983.

5.8 Gas-fired domestic water heaters shall have a standby loss of 3.5% or less measured in accordance with CGA CAN-4.1-77 Gas Fired Automatic Storage Type Water Heaters with Inputs Less than 75000 BTU.

6. ENERGY PERFORMANCE TARGETS

6.1 The annual energy consumption target for an R-2000 Home is determined from the following equation:

Annual Energy Target: $Q_s + Q_w$

where :

Q_s = space heating energy consumption target
Q_w = domestic hot water energy consumption target

6.1.1 The annual space heating energy consumption target is calculated using the equation:

$$Q_s = S*(60*DD/6000)*(35 + V/2.5)$$

where :

S = 4.5 megajoules (MJ) for fuel-fired space heating systems
S = 1.0 kilowatt hours (kWh) or 3.6 megajoules (MJ) for electric space heating systems.

DD = Celsius heating degree days for the locality.

V = Interior heated volume, including basement, in cubic metres.

6.1.2 The annual domestic hot water heating energy consumption target is calculated using the equation:

$Q_w = 4745*W * (55-T_w)/(55-9.5)$
where:
T_w = local water mains temperature
W = 1.72 kilowatt hours (kWh) or 6.19 megajoules (MJ) for fuel-fired DHW systems
W = 1.075 kilowatt hours (kWh) or 3.87 megajoules (MJ) for electric DHW systems.

6.1.3 Reserved for future inclusion of the annual space cooling energy target.

6.1.4 Reserved for future inclusion of the annual lighting energy target.

6.1.5 Reserved for future inclusion of the annual appliance energy target.

6.2 The current authorized version of the HOT-2000 computer analysis program is used as the basis for determining compliance with the annual energy target. All HOT-2000 computer analysis are to be done in accordance with "HOT-2000 Design Approval Procedures and Guidelines".

7. LIGHTS AND APPLIANCES

7.1 Builders including appliances with the sale of a home shall offer the home owner the option of selection of appliances in the upper 33% of the Energuide rating for that appliance category.

7.2 An energy credit will be allowed for builder installed, high efficiency lamps (40 lumens/watt minimum). The credit will be given for each lamp, up to a total of 4, installed in any combination of the following rooms: bathrooms, bedrooms, hallways, kitchen, utility room, or other finished rooms.

7.3 An energy credit will be allowed for direct ducted ventilation system and/or electronically commutated motors (ECM) used for the furnace fan.

8. INDOOR AIR QUALITY

8.1 At least two of the following options, which refer to materials used only inside the air barrier or air/vapour barrier, shall be selected.

If all of the options are selected, then the house can be assumed to operate at 75% of the CSA F326 ventilation capacity for design evaluations under clause 6.2:

i) Carpeting; carpeting (except as noted) shall be labelled under the Canadian Carpet Institute's Green Label Program and shall cover no more than 50% of the interior floor area. The interior floor area includes the basement floor area. The following floor coverings are exempt: wool or cotton area rugs, and carpeting that has latex-free backing. These (exempt) floor coverings shall not be glued to the floor and cannot have underpads.

ii) Air filtration; a medium efficiency air filter with a minimum 10% ASHRAE average dust spot efficiency shall be installed where air circulating heating, cooling or heat recovery ventilation systems are used.

iii) Paints and Varnishes; all liquid coatings used indoors except on wood floors, are to be water based, interior type or meet or exceed Environment Canada Environmental Choice standards. Prefinished items are allowed.

iv) Flooring Adhesives; all finish flooring adhesives to be either water dispersion, low toxicity formulations or pre-adhesive types.

v) Kitchen cabinets and bathroom vanities; cabinets and vanities shall be solid wood or if made from manufactured wood products shall be made from formaldehyde-free fibre board; or particleboard meeting the E-1 European standard of the HUD Standard, 24 CFR Part 3280.308; or have all exposed surfaces sealed with an Environmental Choice approved sealer or a low toxicity sealer.

vi) Wood flooring; all liquid coatings used on wood flooring shall meet or exceed Environment Canada Environmental Choice standards (for paints) or be prefinished.

vii) Vinyl flooring; all vinyl flooring shall be either linoleum or synthetic vinyl tile. Sheet vinyl flooring shall not be used.

viii) Particleboard Underlayment; all particleboard flooring underlayment shall meet the E-1 European standard or the ANSI A208.1-1993 Table B standard; or have all surfaces sealed with an Environmental Choice approved sealer or a low toxicity sealer; or be prefinished.

9. ENVIRONMENTAL FEATURES/ECO-MANAGEMENT

9.1 Water Conservation

Where the following fixtures are installed, they shall meet the following criteria:

toilets:	water saver or ultra-low flush units; 13.25 litres/flush or less
showers:	low flow shower heads; 9.8 litres/min (2.15 imp. GPM) or less when tested at (80 psi) 550.8 kPa.
faucets:	lavatory and kitchen faucets 8.3 litres/min (1.84 imp. GPM) or less when tested at(60 psi) 413.1 kPa.

9.2 Materials Conservation

The dwelling unit shall incorporate a minimum of one of the following materials conservation features. The product must be present in the entire application for which it is used.

Insulation:

(As a minimum use entirely in either the attic, the main walls or in the basement walls.)

#1 Fibre Glass Insulation
- meets or exceeds the requirements of the Environmental Choice Program for raw material from recycled glass

#2 Cellulose Insulation
- product is manufactured from 100% recycled paper

#3 Mineral Fibre Insulation
- a minimum of 50% of the raw material is recycled

Roofing:

(Use over the entire roof.)

#4 Roofing System
- system contains compatible recycled materials (eg. metal, paper, wood fibres, plastic or rubber)

Sheathing/Drywall:

(Material conservation product must replace equivalent "conventional" product throughout the house.)

#5 Fibreboard
- product is made from recycled newsprint and/or wood fibres

#6 Siding
- manufactured from factory and sawmill waste

#7 Drywall
- product contains recycled gypsum and/or newsprint

Interior:

(Must replace equivalent "conventional" product for entire floor.)

#8 **Steel Studs**
- **a minimum of 23% of the raw material is recycled steel**

#9 **Studs and trims**
- **manufactured from sawmill cut-offs and waste**
- **urea-formaldehyde free**

Exterior:

(Must replace equivalent "conventional" backfill in its entirety.)

#10 **Foundation and/or under slab drainage**
- **mixture of post consumer glass and crushed rock or stone**